WHAT IS CLAIMED IS:

1. A speech recognition apparatus which recognizes spontaneous speech by comparing feature values that represent speech components of uttered spontaneous speech to prestored speech feature data that represents feature values of speech components of speech expected to be uttered, comprising:

a storage device which prestores a plurality of speech feature data;

a speech feature data acquisition device which acquires speech feature data from the storage device;

a classification device which classifies each type of the prestored speech feature data into a plurality of data groups based on predetermined rules;

an extraction device which extracts data group feature data that represents feature values of each of the classified data groups;

an environmental data acquisition device which acquires environmental data about conditions of an environment in which the spontaneous speech is uttered;

a generating device which generates the speech feature data for use to compare the feature values of the spontaneous speech, based on the prestored speech feature data, the attribute data that represents attributes of the classified data groups, the acquired data group feature data, and the environmental data; and

a recognition device which recognizes the spontaneous

speech by comparing the generated speech feature data to the feature values of the spontaneous speech.

2. The speech recognition apparatus according to claim 1, wherein the extraction device extracts vector data of a barycentric vector in each data group as the data group feature data for each of the classified data groups.

3. The speech recognition apparatus according to claim 1, wherein the generating device comprises:

a first calculation device which calculates a differential feature value that represents a difference between each of the speech feature data and the data group feature data of the data group to which each item of the speech feature data belongs;

a second calculation device which calculates adaptive data group feature data that is adapted to a speech environment by superimposing the environmental data on the acquired data group feature data; and

a speech feature data generating device which generates the speech feature data for use to compare the feature values of the spontaneous speech, based on the calculated differential feature value of speech feature data, the attribute data, and the calculated adaptive data group feature data.

4. The speech recognition apparatus according to claim 3, wherein the first calculation device calculates the

differential feature value in advance.

5. The speech recognition apparatus according to claim 3, wherein the extraction device calculates the data group feature data in advance.

6. The speech recognition apparatus according to claim 3, wherein the first calculation device calculates the differential feature value in advance, and the extraction device calculates the data group feature data in advance.

7. The speech recognition apparatus according to claim 3, wherein when the extraction device extracts the vector data of the barycentric vector as the data group feature data for each data group, the first calculation device calculates vector data of a differential vector between each of the speech feature data and the data group feature data of the data group to which the speech feature data belongs, as the differential feature value.

8. The speech recognition apparatus according to claim 1, wherein when speech recognition is performed by classifying the feature values of the uttered spontaneous speech into keywords to be recognized and non-keywords which do not constitute any keyword;

speech feature data of the keywords and speech feature data of the non-keywords have been stored in the storage device;

and

the classification device classifies the speech feature data into a plurality of data groups separately for the keywords and non-keywords based on predetermined rules.

9. The speech recognition apparatus according to claim 1, comprising:

a spontaneous speech feature value acquisition device which acquires spontaneous speech feature values that represent speech components of the spontaneous speech, by analyzing the spontaneous speech,

wherein the recognition device comprises:

a similarity calculation device which compares the spontaneous speech feature values acquired from at least part of speech segments of the spontaneous speech to the generated speech feature data and thereby calculates a degree of similarity between characteristics of the feature values and the generated speech feature data, and

a spontaneous speech recognition device which recognizes the spontaneous speech based on the calculated similarity.

10. A speech recognition method which recognizes spontaneous speech by comparing feature values that represent speech components of uttered spontaneous speech to prestored speech feature data that represents feature values of speech components of speech expected to be uttered, comprising:

a speech feature data acquisition process which acquires speech feature data from a storage device which prestores a plurality of speech feature data;

a classification process which classifies each type of the prestored speech feature data into a plurality of data groups based on predetermined rules;

an extraction process which extracts data group feature data that represents feature values of each of the classified data groups;

an environmental data acquisition process which acquires environmental data about conditions of an environment in which the spontaneous speech is uttered;

a generating process which generates the speech feature data for use to compare the feature values of the spontaneous speech, based on the prestored speech feature data, the attribute data that represents attributes of the classified data groups, the acquired data group feature data, and the environmental data; and

a recognition process which recognizes the spontaneous speech by comparing the generated speech feature data to the feature values of the spontaneous speech.

11. A recording medium on which a speech recognition program is recorded in computer-readable form, wherein the speech recognition program makes a computer recognize spontaneous speech by comparing feature values that represent speech components of uttered spontaneous speech to prestored speech

feature data that represents feature values of speech components of speech expected to be uttered, and makes the computer function as:

a speech feature data acquisition device which acquires speech feature data from a storage device which prestores a plurality of speech feature data;

a classification device which classifies each type of the prestored speech feature data into a plurality of data groups based on predetermined rules;

an extraction device which extracts data group feature data that represents feature values of each of the classified data groups;

an environmental data acquisition device which acquires environmental data about conditions of an environment in which the spontaneous speech is uttered;

a generating device which generates the speech feature data for use to compare the feature values of the spontaneous speech, based on the prestored speech feature data, the attribute data that represents attributes of the classified data groups, the acquired data group feature data, and the environmental data; and

a recognition device which recognizes the spontaneous speech by comparing the generated speech feature data to the feature values of the spontaneous speech.